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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,228

06/20/2006

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095309.57265US

5467

23911 7590 07/22/2009
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EXAMINER

LIAO, DIANA J

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

07/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,228	Applicant(s) DUVINAGE ET AL.	
	Examiner DIANA J. LIAO	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinzawa (5,855,854) in view of Brück (5,506,028) and Dalla Betta (5,258,349)

Shinzawa teaches an oxidizing catalytic converter to be used in an exhaust gas system. The catalyst comprises a low temperature part and a high temperature part. It is preferable that the low temperature part is contains platinum particles of 2-4 nm and the particle size of the high temperature part be 20 nm. (col 3, lines 19-23) The platinum loading is preferably higher in the low temperature part than the high temperature part. The high temperature part is preferably upstream from the low temperature part. (col 3, lines 35-42) The lower temperature preferably contains a

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greater number of cells than the high temperature part. (col 3, lines 56-60) Thus Shinzawa teaches a catalyst for use with exhaust gas containing two regions, one meant for high temperature upstream from one of low temperature. The upstream high temperature area contains a lower concentration of catalytic platinum of a larger particle diameter, and a larger washcoat loading in general.

Shinzawa does not use the term "light off" temperature, but it fairly teaches compositions meant to function at a higher temperature and then a lower temperature. The specification defines "light-off" as the start up temperature (para. 10) and that in the exhaust cleaning system, the region with high light-off temperature contains lower specific noble metal content and/or a larger particle diameter. This suggests that the "high temperature" zone of a larger particle size and lower unit concentration of platinum in Shinzawa has a higher light off temperature than the other region.

Regarding temperature resistance and specific heat capacity, Shinzawa does not offer direct teachings. However, the high temperature region does contain a higher washcoat loading in general, which would lead to an increase in overall time taken to increase in temperature. It would have also been obvious to one of ordinary skill in the art to optimize temperature resistance or specific heat capacity to best suit the catalyst and temperatures at which they must function.

Shinzawa does not specifically offer teachings regarding cell density, a gradient, a diffusion layer, a cone shape with or without a predominantly second region, or a layered composition.

Regarding cell density, Shinzawa teaches that the downstream low temperature zone should have a greater number of cells than the upstream high temperature region. In embodiments where the catalyst is of an even width, such as in the drawings, in order for there to be a greater number of cells in the downstream portion, the cell density would have to be lower in the intake region and greater in the discharge region. Thus, Shinzawa is found to suggest a greater cell density in the discharge region.

Regarding the cone shape and also regarding cell density, Brück teaches a conical honeycomb body. The conical honeycomb may receive a catalytic coating. Since the honeycomb has less mass than its cylindrical counterpart, it heats up more quickly and evenly. (col 2, lines 5-14) A honeycomb shape entails a body with passages through which a fluid can flow. In a conical shape, if the passages are to extend from inlet to outlet, then the openings at the larger inlet need to be larger to make up for the space. These larger openings compared to the smaller downstream exits lead to a lower cell density at the intake region of the catalyst structure, and a higher cell density at the discharge region.

One of ordinary skill in the art would have been motivated to combine this conical shape with the catalytic coating of Shinzawa in order to attain a structure which heats up faster and more evenly, as hot spots are not desirable.

Regarding the catalytic layer having predominantly a second region, it would have been obvious to one of ordinary skill in the art to optimize the amount of each region. The second region, the low light off temperature region, would be advantageous since it functions at lower temperatures.

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Dalla Betta teaches a catalyst suitable for use in controlling pollution from sources such as from automobiles. The catalyst may employ a diffusion barrier to limit the fuel which reaches the catalyst and thus the reaction rate and temperature, and/or a metal substrate resistant to thermal shock. (col 4, lines 1-8) The diffusion barrier may also be applied to only a portion of the surface of the catalyst. (col 11, lines 21-27)

Since Shinzawa teaches the importance of temperature control and its effects on the activity, it would have been obvious to one of ordinary skill in the art to use a diffusion layer if necessary to control the reaction rate and temperature of the catalyst where needed.

Regarding the use of gradients or layers, one of ordinary skill in the art would understand that the construction of catalysts includes using layers and gradients. For example, Dalla Betta teaches the use of gradients and layers of varying activities. (Fig 1 and 2) Using catalyst creation schemes to utilize high temperature and low temperature areas is not found patentable over the prior art.

Response to Arguments

4. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

The teachings of Dalla Betta are still drawn to the exhaust catalyst art, even if the main inventive teachings are not drawn to the gradient of the claimed catalyst. Dalla Betta also deals with preventing hot spots and overheating of exhaust catalysts, which is the same problem dealt with in the instant application.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA J. LIAO whose telephone number is (571)270-3592. The examiner can normally be reached on Monday - Friday 8:00am to 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJL

/Steven Bos/
Primary Examiner, Art Unit 1793